

REMARKS

This paper is filed in response to a non-final office action dated April 14, 2010. In the office action, claims 1-5 and 8-25 are rejected as being anticipated by U.S. Patent Application Publication No. 2001/0028872 (“Iwasaki”); and claim 6 is rejected as being obvious over Iwasaki in view of Chinese Patent No. CN1278024 (“Du”). In response, Applicant has amended independent claim 1 to require that at least some of the catalyst is grown epitaxially on said single-crystal zone and on at least a portion of the nanoporous membrane common to numerous pores so that orientation and chirality of the nanoscale filamentary structures is controlled, which is properly supported by paragraphs [0010] and [0072] of the present application. No new matter is added. In view of the amendment and remarks submitted herewith, reconsideration and withdrawal of the rejections raised in the Office action are respectfully requested.

Claim Rejections – Anticipation

Under the MPEP 2131, “[a] claim is anticipated only if each and every element set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Thus, to make a proper anticipation rejection, the Examiner needs to establish that Iwasaki teaches each and every element of the rejected claims.

Here, as amended, each of the rejected claims now requires that at least some of the catalyst is grown epitaxially on said single-crystal zone (of the pore) and on at least a portion of the nanoporous membrane common to numerous pores so that orientation and chirality of the nanoscale filamentary structures are controlled. This limitation is not disclosed in Iwasaki because the catalyst used in Iwasaki is entirely deposited within the nanopores and no catalyst is illustrated in Iwasaki’s drawings or described in Iwasaki’s specification as being present on the nanoporous membrane common to numerous pores. See, *e.g.*, paragraph [0155] (“Co was electrodeposited thereby forming catalytic fine particles 2-1 inside the nanoholes”) and paragraph [0081] (“it is required to apply a negative voltage to the semiconductor at the bottom of the nanoholes where the metal is to be electron-deposited”). See also, FIGs. 12b and 17-20.

Further, the deficiency of Iwasaki cannot be overcome by citing to Nakano and relying on inherency. Although Nakano discloses that a metal deposit can grow epitaxially on a substrate during the early stage of deposition (page 47, lines 3-6), nothing in Nakano indicates

that the metal deposit would continue to grow epitaxially during later stages of deposition or even after the deposition process is over. Regarding the Examiner's reliance on inherency, Applicant wants to remind the Examiner that the deficiency of Iwasaki discussed above cannot be established through inherency unless the Examiner can show that the metal deposition method used in Iwasaki necessarily would result in epitaxial growth of the metal deposit on at least a portion of the nanoporous membrane common to numerous pores. *See* MPEP 2112 IV, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999).

As a result, contrary to the Examiner's assertion, Iwasaki does not disclose that at least some of the catalyst is grown epitaxially on at least a portion of the nanoporous membrane common to numerous pores because the metal deposit is illustrated and described in Iwasaki's specification as disposed within the nanopores. Nor does Iwasaki disclose that orientation and chirality of the nanoscale filamentary structures are controlled as a result of the epitaxial growth of the catalyst. On the contrary, FIGs. 18-20 clearly illustrate that no orientation or chirality control is available to Iwasaki's carbon nanotubes grown on the catalyst deposited merely on the bottom of the nanopores. As Iwasaki fails to disclose each and every element of the rejected claims, the anticipation rejection is overcome by way of this amendment and therefore should be withdrawn.

Claim Rejections – Obviousness

In the office action, dependent claim 6 is rejected as being obvious over Iwasaki in view of Du. To support an obviousness rejection, MPEP §2143.03 requires "all words of a claim to be considered" and MPEP § 2141.02 requires consideration of the "[claimed] invention and prior art as a whole." Further, the Board of Patent Appeal and Interferences recently confirmed that a proper, post-KSR obviousness determination still requires the Office make "a searching comparison of the claimed invention – including all its limitations – with the teaching of the prior art." *See, In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565,

1572 (Fed. Cir. 1995) (emphasis in original). *See also, In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (to establish a *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). In sum, it remains well-settled law that an obviousness rejection requires at least a suggestion of *all* of the claim elements.

As discussed above, Iwasaki does not disclose that at least some of the catalyst is grown epitaxially on said single-crystal zone (of the pore) and on at least a portion of the nanoporous membrane common to numerous pores so that orientation and chirality of the nanoscale filamentary structures are controlled. Citing to Du cannot overcome this deficiency because Du is merely cited for disclosing the subject matter recited in the rejected dependent claim and is irrelevant to filamentary structures or catalyst for growing same. Because the combination of Iwasaki and Du still fails to disclose each and every element of the rejected claim, the obviousness rejection raised in the Office action is overcome and should be withdrawn as well.

CONCLUSION

In light of the foregoing, Applicant respectfully submits that each of the currently pending claims 1-6 and 8-25 are in condition for allowance and respectfully solicits the same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned agent.

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Respectfully submitted,

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